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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,993	12/21/2000	Kenichi Shiozawa	Q62362	5461
7590 06/17/2005			EXAMINER	
SUGHRUE, MION, ZINN, MACPEAK & SEAS 2100 Pennsylvania Avenue, N.W. Washington, DC 20037			MOORE JR, MICHAEL J	
			ART UNIT	PAPER NUMBER
			2666	

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/740,993

Applicant(s)

SHIOZAWA, KENICHI

Examiner

Michael J. Moore, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

The Amendment made to the specification on page 8, line 15 is proper and has been entered.

### *Claim Objections*

Regarding claim 2, an objection was made to this claim as being in improper dependent form for failing to further limit claim 1. After reconsideration, Examiner agrees with Applicant's assertion that steps d) and e) of claim 1 do not explicitly recite what actually forwards the packet to be protected once it is received at the start-point router. Accordingly, this objection has been withdrawn.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Haskin et al. (U.S. 6,813,242). The Haskin et al. reference teaches all of the limitations of the listed claims with the reasoning that follows.

Regarding claims 1 and 2, "a restoration method for restoring a flow of packets in a packet transfer network composed of a plurality of routers" is anticipated by the

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restoration method shown in Figure 2. "Setting a working route and a reserved route in the packet transfer network, wherein the reserved route branches from the working route at a start-point router" is anticipated by the primary (working) path 13, 35, 57 from ingress switch 1 to egress switch 7 as well as alternate (reserved) path 12, 24, 46, 67 that branches from ingress switch 1 (start-point router) to egress switch 7 both shown in Figure 2. "Determining whether a failure occurs in a link to a next-hop router on the working route" is anticipated by the link failure detection along the primary path between switches 5 and 7 as shown in Figure 2. "Determining whether an incoming packet is to be protected" as well as "sending the packet to be protected back to the start-point router" is anticipated by the alternative opposite direction label switched path AP (13,31) established upon detection of a link failure (protection determination) on the protected primary path shown in Figure 2 and spoken of on column 3, line 61 – column 4, line 5. Lastly, "when receiving back the packet to be protected, forwarding it to the reserved route" is anticipated by the forwarding by source switch 1 (start-point router) onto final portion of the alternative path (12,24,46,67) shown in Figure 2 and spoken of on column 4, lines 13-22.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims **3, 5, 6, 8, 9, and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Haskin et al. (U.S. 6,813,242) in view of Cao et al. (U.S. 6,721,269).

Regarding claim **3**, Haskin et al. teaches the method of claim **1**. Haskin et al. fails to explicitly teach where the working and reserved routes are set by a network management server controlling each of the routers in the network. However, Cao et al. teaches a method for protection switching where a plurality of paths are established from a source router to a destination router through a network management system as spoken of on column 2, lines 27-37. Haskin et al. and Cao et al. are considered to be analogous art in that they are both concerned with protection switching in label switching networks. At the time of the invention, it would have been obvious to someone of ordinary skill in the art given these references to combine the teachings of Haskin et al. with the network management system of Cao et al. in order to ensure the establishing of paths that are disjoint as spoken of on column 2, lines 34-37 of the Cao et al. reference.

Regarding claim **5**, Haskin et al. teaches a plurality of switches (routers) in Figure 2. Haskin et al. also teaches primary (working) path 13, 35, 57 from ingress switch 1 to egress switch 7 as well as alternate (reserved) path 12, 24, 46, 67 that branches from ingress switch 1 to egress switch 7 both shown in Figure 2. Haskin et al. also teaches link failure detection (means for detecting failure) along the primary path between switches 5 and 7 as shown in Figure 2 as well as an operational switch OS (packet distribution controller) in Figure 2 that makes the alternate path connection for rerouting incoming packet traffic around the failure. Haskin et al. also teaches the alternative

opposite direction label switched path AP (forwarding back to source switch) established upon detection of a link failure on the protected primary path shown in Figure 2 and spoken of on column 3, line 61 – column 4, line 5. Haskin et al. also teaches the forwarding by source switch 1 onto final portion of the alternative path (12,24,46,67) shown in Figure 2 and spoken of on column 4, lines 13-22.

Haskin et al. fails to teach a network management server for designing a packet protection network as well as a table used for storing protected packet information and for forwarding these packets accordingly. However, Cao et al. teaches a method for protection switching where a plurality of paths are established from a source router to a destination router through a network management system as spoken of on column 2, lines 27-37. Cao et al. also teaches a label information base table in Figure 5 used for forwarding protected packets. At the time of the invention, it would have been obvious to someone of ordinary skill in the art given these references to combine the teachings of Haskin et al. with the network management system as well as the forwarding table of Cao et al. in order to ensure the establishing of paths that are disjoint as spoken of on column 2, lines 34-37 of the Cao et al. reference and also to provide an organized means for storing and utilizing packet forwarding information as shown in Figure 5 of the Cao et al. reference.

Regarding claim 6, Haskin et al. further teaches an ingress switch 1 shown in Figure 2 and spoken of on column 3, lines 46-48.

Regarding claim 8, Haskin et al. teaches a plurality of switches (routers) in Figure 2. Haskin et al. also teaches primary (working) path 13, 35, 57 from ingress switch 1 to

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egress switch 7 as well as alternate (reserved) path 12, 24, 46, 67 that branches from ingress switch 1 to egress switch 7 both shown in Figure 2. Haskin et al. also teaches link failure detection (means for detecting failure) along the primary path between switches 5 and 7 as shown in Figure 2 as well as an operational switch OS (packet distribution controller) in Figure 2 that makes the alternate path connection for rerouting incoming packet traffic around the failure. Haskin et al. also teaches the alternative opposite direction label switched path AP (forwarding back to source switch) established upon detection of a link failure on the protected primary path shown in Figure 2 and spoken of on column 3, line 61 – column 4, line 5. Haskin et al. also teaches the forwarding by source switch 1 onto final portion of the alternative path (12,24,46,67) shown in Figure 2 and spoken of on column 4, lines 13-22.

Haskin et al. fails to teach a table used for storing protected packet information and for forwarding these packets accordingly. However, Cao et al. teaches a label information base table in Figure 5 used for forwarding protected packets. At the time of the invention, it would have been obvious to someone of ordinary skill in the art given these references to combine the teachings of Haskin et al. with the forwarding table of Cao et al. in order to provide an organized means for storing and utilizing packet forwarding information as shown in Figure 5 of the Cao et al. reference.

Regarding claim 9, Haskin et al. further teaches an ingress switch 1 shown in Figure 2 and spoken of on column 3, lines 46-48.

Regarding claim 11, Haskin et al. teaches primary (working) path 13, 35, 57 from ingress switch 1 to egress switch 7 as well as alternate (reserved) path 12, 24, 46, 67

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that branches from ingress switch 1 to egress switch 7 both shown in Figure 2. Haskin et al. also teaches link failure detection along the primary path between switches 5 and 7 as shown in Figure 2. Haskin et al. also teaches an alternative opposite direction label switched path AP (13,31) established upon detection of a link failure (protection determination) on the protected primary path shown in Figure 2 and spoken of on column 3, line 61 – column 4, line 5. Haskin et al. also teaches the forwarding by source switch 1 onto final portion of the alternative path (12,24,46,67) shown in Figure 2 and spoken of on column 4, lines 13-22.

Haskin et al. fails to teach the use of a network management server to establish routes. Haskin et al. also fails to explicitly teach a recording medium storing a computer-readable program for restoration of packet flows. However, Cao et al. teaches a method for protection switching where a plurality of paths are established from a source router to a destination router through a network management system as spoken of on column 2, lines 27-37. Cao et al. also teaches packet restoration methods performed in software implementations making use of processor instructions (computer-readable program) on column 11, lines 24-28. At the time of the invention, it would have been obvious to someone of ordinary skill in the art given these references to combine the teachings of Haskin et al. with the network management system as well as the computer-readable medium teachings of Cao et al. in order to ensure the establishing of paths that are disjoint as spoken of on column 2, lines 34-37 of the Cao et al. reference and also to provide software implementations as an option rather than strictly using hardware.



5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haskin et al. (U.S. 6,813,242) in view of Andersson et al. (U.S. 6,535,481).

Regarding claim 4, Haskin et al. teaches the method of claim 1. Haskin et al. fails to teach the addition of a protection control header to a protected packet upon a failure as well as the removal of this protection control header prior to forwarding to the original protected packet to the reserved route. However, Andersson et al. teaches a protection switching method in Figure 3 wherein upon a link failure 307, a p-cycle label stack 308 is attached to affected (protected) packets. Andersson et al. also teaches the deletion of the label stack and then processing the original packet. Haskin et al. and Andersson et al. are considered to be analogous art in that they are both concerned with protection switching in label switching networks. At the time of the invention, it would have been obvious to someone of ordinary skill in the art given these references to combine the teachings of Haskin et al. with the protection control label stack of Andersson et al. in order to enable packets affected by a failure to be effectively rerouted to a destination as shown in Figure 3 and spoken of on column 4, lines 33-66 of the Andersson et al. reference.

6. Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haskin et al. (U.S. 6,813,242) in view of Cao et al. (U.S. 6,721,269) and in further view of Dantu et al. (U.S. 6,532,088).

Regarding claims 7 and 10, Haskin et al. in view of Cao et al. teaches the packet transfer network of claim 5 as well as the router of claim 8. Haskin et al. in view of Cao et al. fails to explicitly teach transfer and reception of table information between a

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network management server and other routers depending on which of these routers is the start-point router. However, Dantu et al. (U.S. 6,532,088) teaches node 300 (network management server) in Figure 3 that transmits forwarding table information and table updates to nodes 312, 316 and 320 over control lines 324, 328, and 332 as described in column 8, lines 20-39. At the time of the invention, it would have been obvious to someone of ordinary skill in the art given these references to combine the teachings of Haskin et al. in view of Cao et al. with the forwarding table update teachings of the Dantu et al. reference. A motivation for doing so would be to provide updated working path and protection path forwarding specifications as stated in column 8, lines 45-47 of the Dantu et al. reference.

### ***Response to Arguments***

7. Applicant's arguments filed 3/31/2005 have been fully considered but they are not persuasive.

Regarding independent claims **1, 5, 8, and 11**, Applicant argues that Haskin fails to disclose a reserved route that "branches from the working route at a start-point router". Applicant also argues that Haskin fails to disclose sending a protected packet back to the start-point router and forwarding the same to the reserved route. Applicant further argues that in the previous Office Action, Examiner is referring to a portion of Haskin's alternate path and that Haskin's alternative path does not start at a start-point router, but rather starts at the last working hop switch. These assertions are noted.

However, referring back to Figure 2 of Haskin, it is shown how reserved route portion 12, 24, 46, 67 branches from working route 13, 35, 57 at ingress switch 1 (start-

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point router). It is held that this constitutes a reserved route that "branches from the working route at a start-point router". Also shown in Figure 2 and spoken of on column 4, lines 1-45, upon a failure occurring at switch 3, switch 5, or switch 7, the corresponding primary path segment (13, 35, or 57) is coupled to the corresponding alternative path segment (31, 53, or 75) which loops back the packet transmission to the ingress switch 1 (send back to point) where the transmission is then forwarded onto switch 2 via alternative path segment 12. It is held that these teachings anticipate sending a protected packet back to the start-point router and forwarding the same to the reserved route.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Moore, Jr. whose telephone number is (571)

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272-3168. The examiner can normally be reached on Monday-Friday (8:30am - 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached at (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael J. Moore, Jr.  
Examiner  
Art Unit 2666

mjm MM

A handwritten signature in black ink, appearing to read 'Frank Duong', with a stylized, cursive script.

**FRANK DUONG**  
**PRIMARY EXAMINER**